

IKONOS Stereo Mapping Block Adjustment Test

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**IKONOS Workshop
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IKONOS Stereo Mapping Block Adjustment Test

OBJECTIVES

- Evaluate Sensor Accuracy
 - Rigorous math model
 - Polynomial math model with adjustable parameters
 - Space Imaging addition to RPC format
- Influence of Ground Control
- Influence of Multiple Strips in Block Adjustment
- Evaluate Covariance Support Data
 - Predicted errors versus actual errors
 - Adjustable RPC vs Rigorous

Impressive Aspects of the High Resolution Sensors

- **High Resolution**
- Simultaneous Optical and MSI Collection
- Multiple N-S Stereo Strips within Image Block
- Selective Availability Turned Off !
- Smooth Push-broom Motion of Satellite
 - Supported by Gyros and Star Sensors

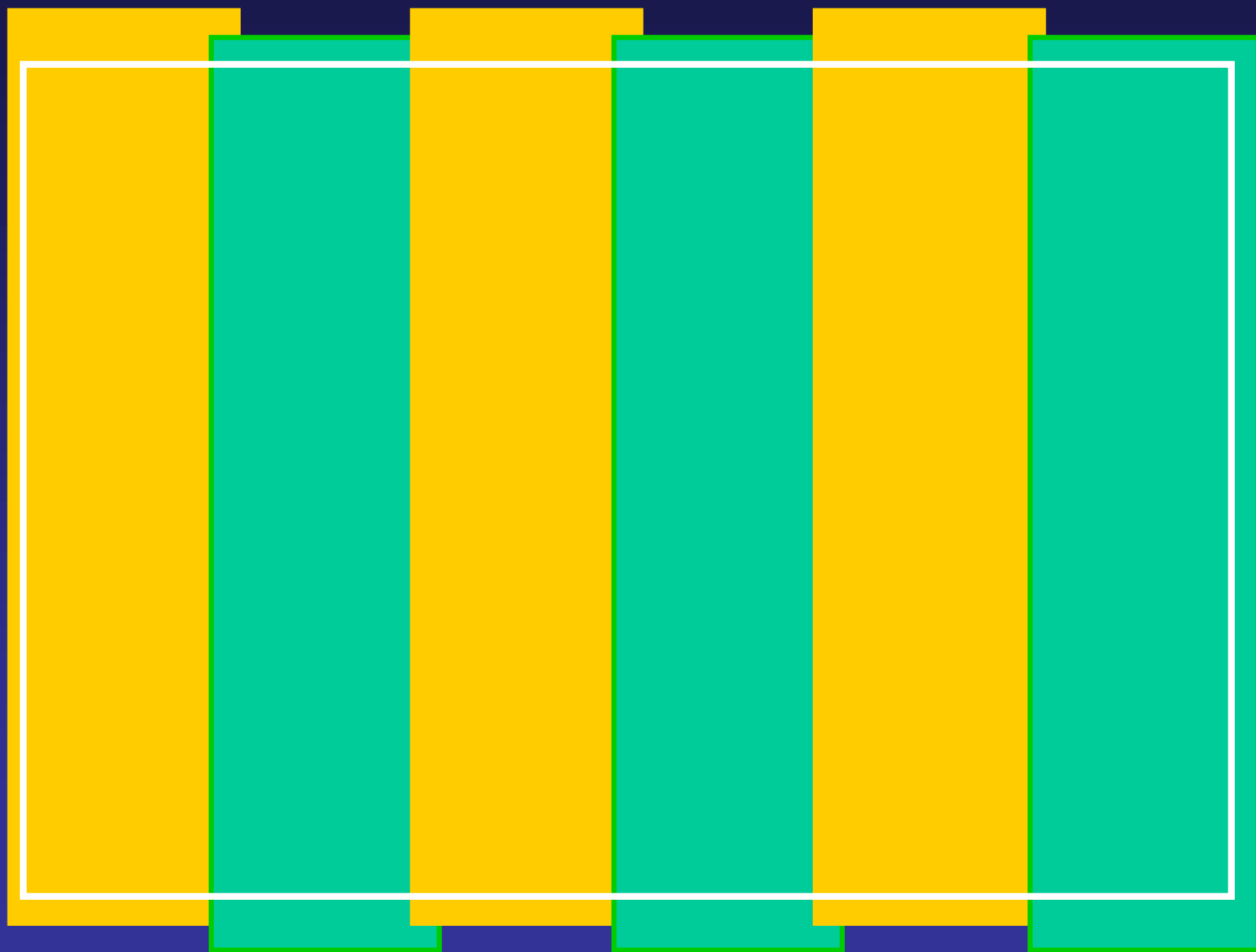
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How accurate are these sensors ?

Is control needed to support medium-scale mapping ?

How much control is needed to support targeting ?

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TEST OUTLINE

- Unadjusted Stereo Pairs
 - Evaluate against control
- Multiple Strips with Ground control
 - Sequential adjustment of strips
 - 1, 1-2, 1-2-3, 1-2-3-4, etc for all 6
- Full Block with Ground Control
 - One GCP near center
 - Several GCPs
 - Multiple GCPs
- All of these include Rigorous vs RPC comparisons

Test Areas

- Namibia, Africa
 - Total area: 5,971 km²
 - Longitude Extent: 16.57 E - 17.22 E
 - Latitude Extent: 22.29 S - 23.22 S
 - Six overlapping strips
- Nellis AFB, Nevada
 - Total area: 929 km²
 - Longitude Extent: 115.00 W - 115.67 W
 - Latitude Extent: 36.21 N - 36.35 N
 - Six overlapping strips
- Using existing SI data in Namibia
- NIMA CIP purchasing Nellis imagery

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TEST LOGISTICS

- All work to be performed at Thornton facility
 - NIMA, USGS and Space Imaging
- Space Imaging manages rigorous adjustment
- Government will perform 'modified RPC' adjustment
 - SocetSet application available at Thornton
 - Related work underway for tactical sensors
- Government generating control data for Namibia
- Government will manage statistical analysis

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TEST STATUS

- Preliminary Discussions at Thornton last Fall
- Namibia imagery available
- Nellis nearly completed collection
- Control generation for Namibia underway
- Funding provided to Space Imaging
- Kick-Off discussion Today!!